

FUEL CELL ANODE STRUCTURE FOR VOLTAGE REVERSAL TOLERANCE

Abstract

In a solid polymer fuel cell series, various circumstances can result in the fuel cell being driven into voltage reversal. For instance, cell voltage reversal can occur if that cell receives an inadequate supply of fuel (for example, fuel starvation). In order to pass current during fuel starvation, reactions other than fuel oxidation may take place at the fuel cell anode, including water electrolysis and oxidation of anode components.

The latter may result in significant degradation of the anode. Such fuel cells can be made more tolerant to cell reversal by promoting water electrolysis over anode component oxidation at the anode. This can be accomplished by incorporating a catalyst composition at the anode to promote the water electrolysis reaction, in addition to the typical anode electrocatalyst for promoting fuel oxidation.